

ISOTECH

547 Professional Thermocouple Calibration Furnace

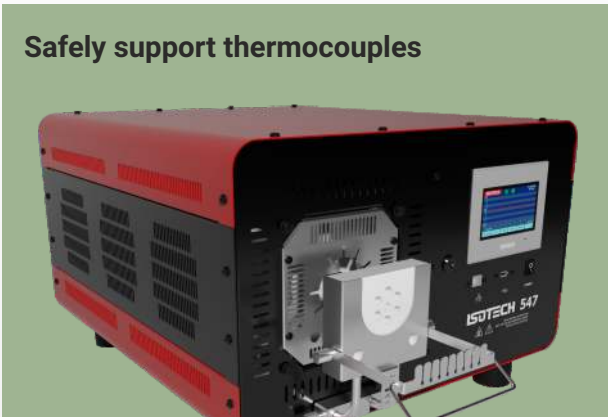
200°C to 1200°C



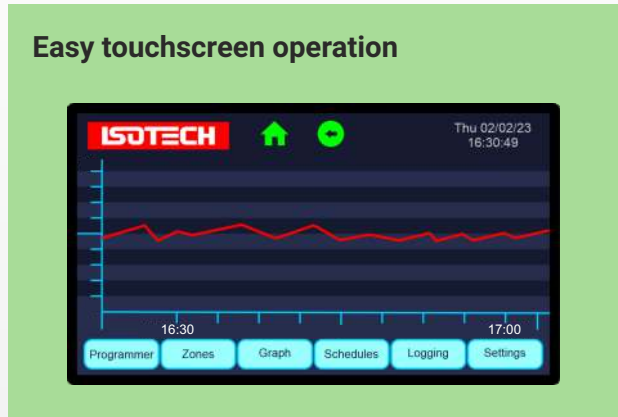
PROVISIONAL V1.0

Why you should choose the 547

Safely support thermocouples



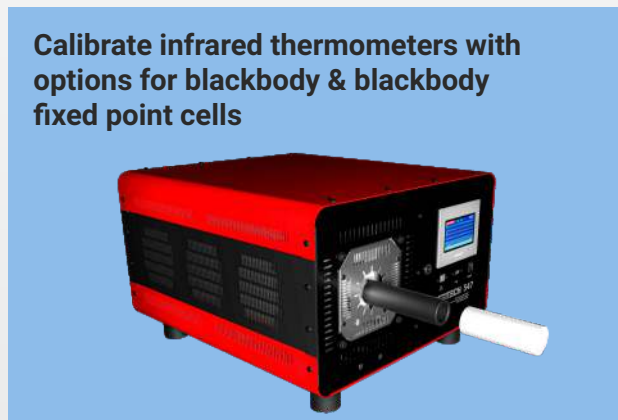
Easy touchscreen operation



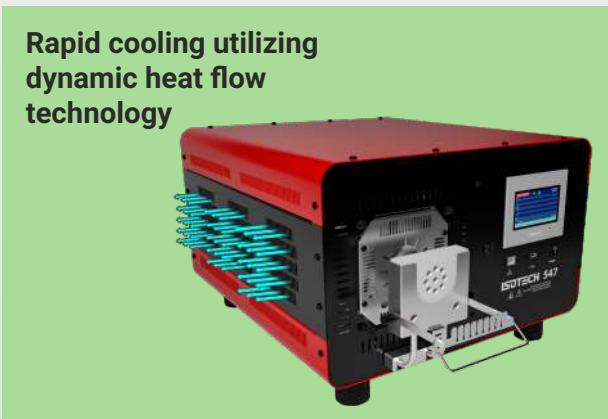
Switch to fixed point calibration for ultimate accuracy



Calibrate infrared thermometers with options for blackbody & blackbody fixed point cells



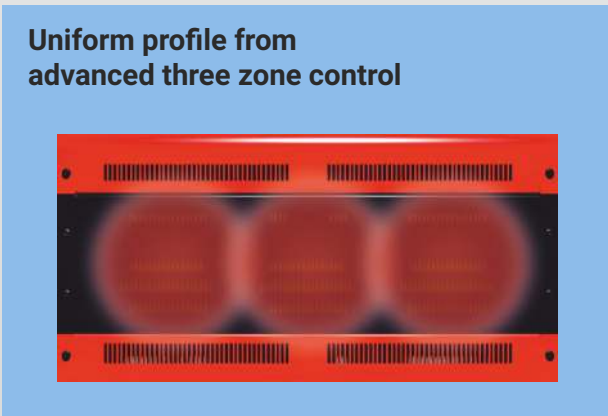
Rapid cooling utilizing dynamic heat flow technology



Can be used open ended to pass through Multi-zone thermocouples



Uniform profile from advanced three zone control



Expand for automated calibration



has used its 40+ years of experience and the very latest technology to develop a new deep immersion dry block calibrator, designed to give the user the most accurate calibration results.

Why is deep immersion important?

“

“Of all the sources of errors and uncertainties in thermal calibration by far the largest source of error and least understood effect is that of immersion of unit under test, and the reference standard.”

from Temperature Calibration; Depths of Immersion, John P. Tavener

“

“A thermometer is sufficiently immersed when there is no change in indicated temperature with additional immersion in a constant temperature environment.”

from Supplementary Information to the International Temperature Scale of 1990

“

“The general problem occurs because there is a continuous flow of heat along the stem of a thermometer between the medium of interest and the outside world. Since heat can only flow where there is a temperature difference, the flow of heat is evidence that the tip of the thermometer is at a slightly different temperature than the medium of interest.”

from Traceable Temperatures., J.V. Nichols & D.R. White

547 Deep Immersion Furnace

The Model 547 is the professional solution for accurate and contamination-free temperature calibration, designed to meet the needs of professionals in a wide range of industries, from industrial to laboratory

- > High accuracy thermocouple calibration
- > Calibrates both laboratory and industrial thermocouples
- > Options for Blackbody and ITS-90 fixed point calibration

Featuring a user-friendly touchscreen interface, the Model 547 makes temperature calibration easier than ever. With the ability to be adapted for blackbody use, this furnace is perfect for calibrating infrared thermometers. And with the option to use fixed points for ultimate accuracy, it can calibrate standard thermometers to uncertainties of just a few thousandths of a degree.

The Model 547 is also designed to accommodate open-ended multi-zone thermocouples, making it an ideal choice for calibration professionals in the semiconductor industry.

With a focus on safety and convenience, the Model 547 has been “designed by metrologists for metrologists”. When used in combination with our companion products for checking thermocouple homogeneity, laboratory standard thermocouples, cold/reference junction equipment, and software to automate thermocouple calibration, it is a complete solution for all your temperature calibration needs, that no other company can rival.



Invest in the Model 547 Thermocouple Calibration Furnace and experience the ultimate in temperature calibration accuracy and convenience.

Model	547
Temperature Range	200°C to 1200°C
Stability	<0.08°C over the entire range
Uniformity	@200°C ±0.2°C @1200°C ±0.3°C
Display	4.5" Touchscreen
Display Resolution	0.01°
Heating Time	50°C to 1200°C in 45 minutes
Cooling Time	1200°C to 300°C in 90 minutes
Calibration Volume	46mm diameter x 450mm deep
Minimum Immersion	180mm
Interface	Ethernet, Serial (RS485), USB Host
Power	3kW
Dimensions	W510mm x H325mm x L660mm
Weight	55kg

Accessories

> Accessories > Metallic Inserts

Metallic Insert	547-07A	547-07B	547-07C	547-07D
Insert Diameter	45mm	45mm	45mm	Custom Insert Please Specify
Insert Length	130mm	260mm	260mm	
Insert Type	Sensor Pockets	Sensor Pockets	Through Holes	
Holes	6 x 8mm holes	6 x 8mm holes	6 x 8mm holes	

Insert Type > Sensor Pockets> Standard or custom drilled insert with blind holes for calibrating sensors

Insert Type > Through Holes> Open ended insert allows pass through of multi-zone thermocouples

> Accessories > Ceramic Inserts

Ceramic Insert	547-07E	547-07F	547-07G	547-07H
Insert Diameter	45mm	45mm	45mm	Custom Insert Please Specify
Insert Length	130mm	260mm	260mm	
Insert Type	Sensor Pockets	Sensor Pockets	Through Holes	
Holes	6 x 8mm holes	6 x 8mm holes	6 x 8mm holes	

Insert Type > Sensor Pockets> Standard or custom drilled insert with blind holes for calibrating sensors

Insert Type > Through Holes> Open ended insert allows pass through of multi-zone thermocouples

> Accessories > Blackbody Target

Blackbody Target	547-07I
Target Diameter	45mm
Target Length	272.5mm
Aperture	Standard

Blackbody Target > High emissivity source to calibrate infrared thermometers

> Accessories > Blackbody Cells

Blackbody Cell	Zinc	Aluminium	Silver
Model Number	998-06-00C	998-06-00D	998-06-00E
Temperature	419.527°C	660.323°C	961.78°C
Aperture	10mm	10mm	10mm

Blackbody Cell > High emissivity source to calibrate infrared thermometers

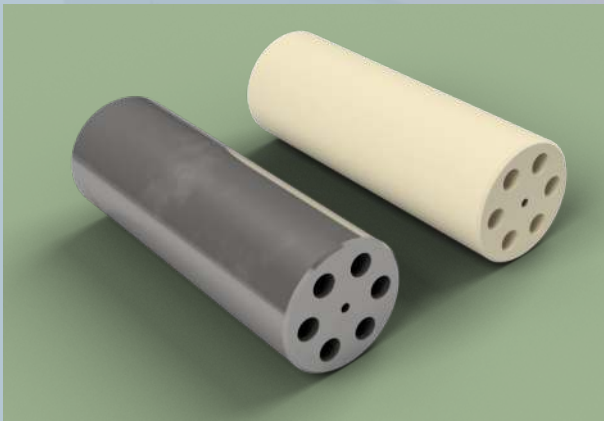
> Accessories > Fixed Point Cells

Fixed Point Cell	Aluminium	Silver	Copper
Number	17672	17673	17674
Temperature	660.323°C	961.78°C	1084.62°C
Inside Diameter	8mm	8mm	8mm

Fixed Point Cell > For laboratory level calibration

Choice of Alumina or Metallic Inserts

- **Alumina:** metal free inserts-avoid contaminating laboratory standard thermocouples.
- **Metal:** high temperature alloy inserts for high capacity industrial sensor calibration.



Inserts with Sensor Pockets or Through Holes

- **Drilled with Sensor Pockets:** for calibrating Laboratory Standard and Industrial Sensors.
- **Drilled with Through Holes:** for calibrating multi-zone Thermocouples.

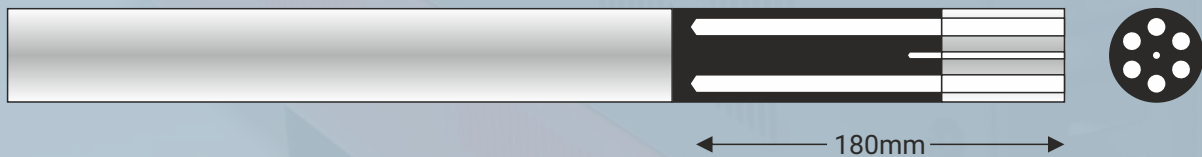


547-07A

Short Metallic Insert, with sensor pockets.

547-07E

Short Ceramic Insert, with sensor pockets.

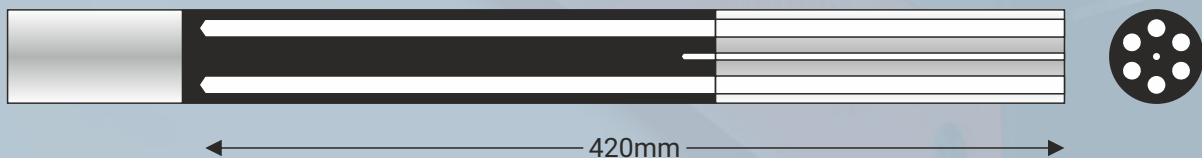


547-07B

Long Metallic Insert, with sensor pockets.

547-07F

Long Ceramic Insert, with sensor pockets.

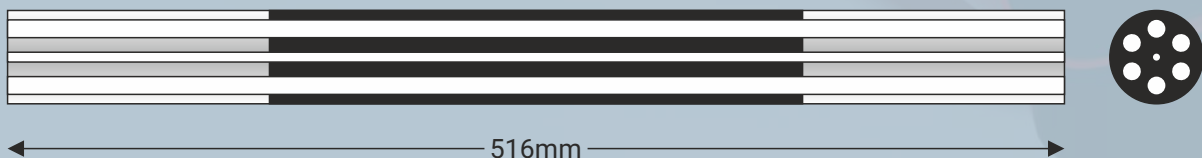


547-07C

Long Metallic Insert, with through holes.

547-07G

Long Ceramic Insert, with through holes.



Fixed Point Calibration

- Switch to Fixed Point Calibration for ultimate accuracy use with ITS-90 Fixed Point Cells for accuracy to $<0.005^{\circ}\text{C}$.



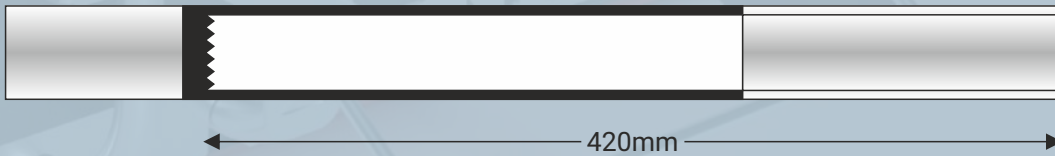
17672 / 17673 / 17674
Fixed Point Cells
(Aluminium / Silver / Copper)



Infrared Thermometer Calibration

- Calibrate Infrared Thermometer using the options of Blackbody Target or Blackbody Fixed Point Cells.

547-071
Blackbody Target

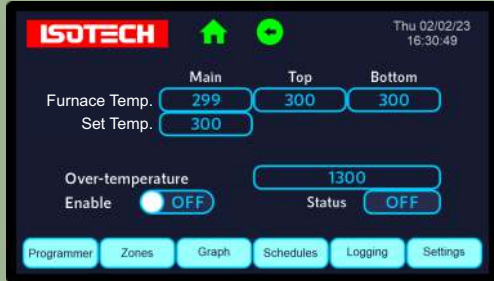


998-06-00C / D / E
Blackbody Cell (Zinc / Aluminium / Silver)

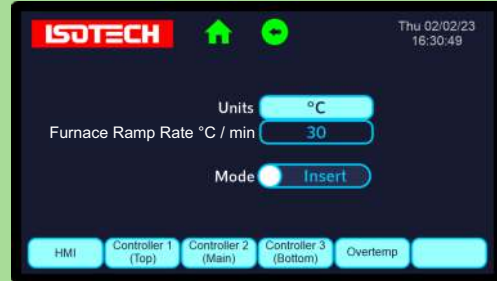


Easy Control with Advanced Features

Clear user interface



Control the heating rate



Log data



Review the stability



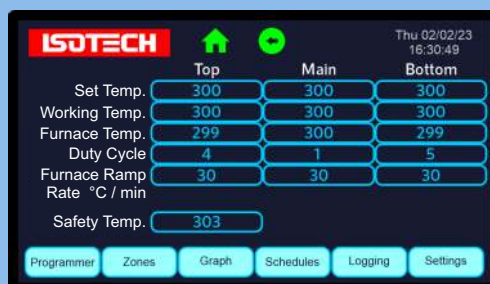
Schedule, set operating times, save time and money



Easily manage pre-set temperature routine



Multi-zone control





**For successful temperature calibration
you need more than just a furnace...**



**Trust ISOTECH for the
complete solution.**

881 Thermocouple Homogeneity Scanner

- > Determine uncertainty due to inhomogeneity
- > Identify contaminated sections of thermocouple wire
- > Assess quality of thermocouple wires

The Isotech Model 881 Dual Heatpipe Thermocouple Homogeneity Scanner provides a fully automated solution to the problem of measuring thermocouple homogeneity.

The operation of a thermocouple relies on the Seebeck Effect which causes an emf to be generated in any region of a thermo element that is exposed to a temperature gradient. Undesirably, nearly all thermocouples develop non-uniformities (inhomogeneities) in their thermoelements during normal use.

If one is to assess the accuracy of a thermocouple, then the inhomogeneity of the thermocouple is a major concern. Increasingly, users and laboratories want to be able to measure thermocouple inhomogeneity.

The scanner can be used to determine:

- > If wire/cable manufacturing processes meet quality standards or tolerances.
- > Whether a thermocouple is damaged or faulty and unfit for use or calibration.



Standard Thermocouples

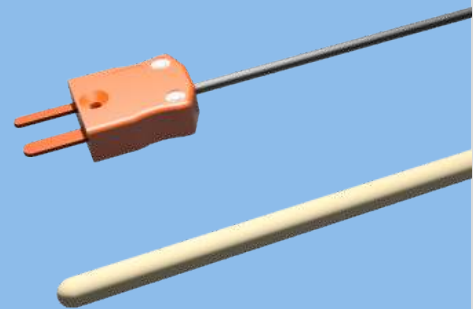
- > Type R, Type S, Model 1600 Platinum / Platinum Rhodium
- > Gas tight assembly
- > Premium grade wire

A range of standard thermocouples calibrated to world leading uncertainties.

Isotech Model 1600: Platinum / Platinum Rhodium available as Type R or Type S these thermocouples are housed in a 99.7% recrystallized alumina sheath, 300 or 600 mm long and can be used to 1600°C.

Isotech Gold / Platinum Thermocouple: This model offers smaller uncertainties than Type R or S using only pure metals in the construction and can be considered as an alternative to HTSPRTs.

NPL Platinum / Palladium Thermocouple: This model manufactured by the National Physical Laboratory (NPL) was developed to operate reliably and accurately to 1500°C and offers superior stability to conventional platinum / platinum rhodium thermocouples. We can arrange option fixed point calibration to offer the lowest of calibration uncertainties, $\pm 0.3^\circ\text{C}$ to 1100°C rising to $\pm 0.55^\circ\text{C}$ at 1330°C.



Measuring System & Automation Software

- > Fully automatic calibration
- > Design and print certificates
- > Calculate coefficients

Use I-Cal Easy to automate sensor calibration, enter up to 20 calibration points and let the software set the calibrator, wait for stability and log the data automatically. Choose the stability criteria and how many points to record at each calibration temperature. Automatic temperature calibration the easy way.

I-Cal Easy lets you use a built-in template or design your own certificate. Add text, data fields and graphics on single or multiple pages, then publish the calibration data to the certificate. Do you want to include or calculate coefficients? Then drag your data to the ITS-90 or Calender Van Duesen calculators. For thermocouples use the powerful regression calculator to fit error curves.

The Isotech milliK bench thermometer offers industry leading accuracy, and can be expanded to have up to 33 channels for standard thermocouples and the units under test.



Cold Junction Reference Units

- > Wide range of reference junctions
- > 0°C temperature reference units
- >UKAS calibration available

Cold or Reference Junction

Often overlooked the reference junction is important in temperature calibration, see our White Paper, Double Junction Thermocouple: What is it and how can it be used?

We can provide calibrated Multi Junction Laboratory Probes, Model 880 which are suitable for use with all Isotech thermocouple reference units or may be used with any other equipment including ice flasks and ice point reference units.

In addition to the reference junctions we have a full range of Temperature Reference Units that supply a stable and accurate 0°C or elevated reference temperature.



ISOTECH

About Us

The world leader in temperature metrology, with over 40 years' experience.

Our clients include the world's leading laboratories including National Laboratories, leading ISO 17025 Accredited Laboratories and users in all industries.



Why Choose Isotech?

- > Innovation - winner of the Queen's Award for Enterprise in the Innovation Category, 2017. 
- > Isotech has solutions for all calibration needs, from Primary Laboratories maintaining National Standards to the needs of field engineers calibrating industrial sensors on site. Isotech is truly "The Source for Calibration Professionals".
- > Global Network - local support. Isotech has over 90 authorized sales agents worldwide! No matter where you are, we can offer local support.
- > The world's leading National Metrology Institutes choose Isotech - shouldn't you?



Temperature Metrology Solutions for:

- > ITS-90 Primary Standards
- > Industrial Sensor Calibration
- > Secondary Temperature Calibration
- > Infrared Thermometers
- > High Accuracy Temperature Measurement
- > Thermocouple Referencing Equipment

ISO 17025 calibration services to the smallest of uncertainties and with international recognition

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